

Notice of Allowability

Application No.

10/785,732

Examiner

Marissa J. Detschel

Applicant(s)

JOHS ET AL.

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims before allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed December 7, 2006.
2. ☒ The allowed claim(s) is/are 8, 12, 14, 16, 18 and 19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20070108.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Welch (RN 31216) on January 9, 2007.

The application has been amended as follows:

- In claim 8, line 1, the phrase "A method of tracking fabrication of a sample" has been replaced with --A method of fabricating a sample--
- In claim 8, line 4, the phrase "Angstroms comprising the steps of:" has been replaced with --Angstroms, said method incorporating a procedure comprising steps a-e, said steps a-e being:--
- In claim 8, please replace part a) with the phrase --a) while fabricating a reference sample which comprises a sequence of high and low "K" dielectric constant layers practicing step b;--
- In claim 8, please replace part c) with the phrase --c) while fabricating a second sample which is meant to be the same as the reference sample practicing steps d and e;--
- In claim 8, part d), line 2, the phrase "differences" should be replaced with --differences in--
- In claim 8, the phrase please add the step --f) practicing said procedure in steps a-e to fabricate a second sample which is substantially identical to said fabricated reference sample-- after part e) of this claim.
- In claim 8, the phrase "said procedure resulting in the fabricated second sample being substantially identical to said fabricated reference sample." has been removed from the end of this claim.
- In claim 8, the phrase --said method being further distinguished in that the electromagnetic radiation comprises wavelengths in at least selection from the group consisting of: FIR; IR; NIR-VIS-UV; UV; DUV; and VUV.-- has been added at the end of the claim.
- Claim 13 has been cancelled.

- In claim 14, line 1, the phrase "A method of evaluating thickness of an ultrathin film comprising the steps of:" has been replaced with --A method of fabricating an ultrathin film of a determined thickness, said method involving a procedure comprising steps a-e, said steps a-e being:--
- In claim 14, part b), line 4, the phrase "ellipsometric PSI () and DELTA ()," has been replaced with --ellipsometric PSI (Ψ) and DELTA (Δ),--
- In claim 14, part c), line 9, the phrase "ellipsometric PSI () and DELTA ()," has been replaced with --ellipsometric PSI (Ψ) and DELTA (Δ),--
- In claim 14, part c), line 10, the phrase "at least one selection from the group consisting of:" has been removed.
- In claim 14, part d), lines 2-3, the phrase "at least one difference selected from the group consisting of:" has been replaced with --differences between:--
- In claim 14, the phrase --said parameter being an RMS value calculated from:

$$\sqrt{\frac{(N_f - N_0)^2 + (C_f - C_0)^2 + (S_f - S_0)^2}{3}}$$

has been added to the end of part d) of the claim.

- In claim 14, please add the steps:
 - f) performing steps a-e at least twice to fabricate at least two concrete and tangible systems, each thereof comprising an ultrathin film on a layer of optically transparent material which is greater than about 250 Angstroms deep, and comparing the results obtained in step e during one performance of said steps a-e to results obtain in step e during another performance of steps a-e to enable determination that the thin film thickness of one of said at least two concrete and tangible systems is the same as or is different from the thin film thickness of another of said at least two concrete and tangible system.
 - g) accepting the results of the fabrication if at least two thin film thicknesses are substantially the same.--
- at the end of the claim
- Claim 15 has been cancelled.
- In claim 16, line 1, the phrase "A method for evaluating thickness of" has been replaced with --A method of fabricating--
- Claim 17 has been cancelled.
- In claim 18, line 1, the phrase "A method for evaluating thickness of" has been replaced with --A method of fabricating--

- In claim 18, line 2, the phrase "optical constants" has been replaced with -- optical constants--
- In claim 19, line 1, the phrase "A method of tracking fabrication of a sample comprising a sequence of high and low "K" dielectric constant layers of material which have thickness on the order of less than 100 Angstroms comprising the steps of:" has been replaced with --A method of fabrication a sample comprising a sequence of high and low "K" dielectric constant layers of materials which each have a thickness on the order of less than 100 Angstroms, said method involving a procedure comprising the steps of:--
- In claim 19, please replace part a) with the phrase --a) while fabricating a reference sample which comprises a sequence of high and low "K" dielectric constant layers practicing step b;--
- In claim 19, please replace part c) with the phrase --c) while fabricating a second sample which is meant to be the same as the reference sample practicing steps d and e;--
- In claim 19, part d), line 2, the phrase "differences" should be replaced with -- differences in--
- In claim 19, the phrase please add the step --f) practicing said procedure in steps a-e to fabricate a second sample which is substantially identical to said fabricated reference sample-- after part e) of this claim
- In claim 19, the phrase "said procedure resulting in the fabricated second sample being substantially identical to said fabricated reference sample." has been removed from the end of this claim.
- In claim 19, the phrase --said method being further distinguished in that the electromagnetic radiation comprises wavelengths in at least selection from the group consisting of: FIR; IR; NIR-VIS-UV; UV; DUV; and VUV.-- has been added at the end of the claim.

Allowable Subject Matter

Claims 8, 12, 14, 16, 18, and 19 are allowed in view of the prior art.

The following is an examiner's statement of reasons for allowance:

As to claim 8, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for fabricating a sample comprising obtaining spectroscopic data in the form of ellipsometric spectroscopy data for both fabricated reference and measurement samples and modifying fabrication parameters of the method according to differences in at least one of

the N, C, and S parameters calculated for each of the samples from the obtained spectroscopic ellipsometric data, in combination with the rest of the limitations of claim 8.

As to claim 14, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for fabricating an ultrathin film of a determined thickness comprising providing a system comprising an optically absorbing substrate with a layer of optically transparent material on the surface thereof, taking spectroscopic ellipsometric measurements of the system, adding a layer of ultrathin film to the surface of the system, taking spectroscopic ellipsometric measurements of the system with the ultrathin film and determining a difference in the N, C, and S parameters from the spectroscopic ellipsometric measurements between the system without the ultrathin film and the system with the ultrathin film and using the measurements to evaluate the thickness of the ultrathin film, repeating the procedure to fabricate another system, comparing the evaluated thin film thicknesses of the two systems and accepting the results of the fabrication if the film thicknesses are the same, in combination with the rest of the limitations of claim 14.

As to claim 19, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for fabricating a sample comprising obtaining spectroscopic data in the form of ellipsometric spectroscopy data for both fabricated reference and second samples and modifying fabrication parameters of the method according to differences in a root mean squared value calculated from N, C, and S parameters calculated for each of the samples from the obtained spectroscopic ellipsometric data, in combination with the rest of the limitations of claim 19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the

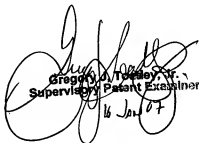
issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 9, 2007
MJD


Gregory J. Toatley, Jr.
Supervisory Patent Examiner
16 Jan 07